

## PATENT COOPERATION TREATY

PCT REC'D/ST/TS 10 JAN 2005

INTERNATIONAL PRELIMINARY EXAMINATION REPORT  
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 3610PTTWO/AG/1a	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP 03/07486	International filing date (day/month/year) 10.07.2003	Priority date (day/month/year) 10.07.2002
International Patent Classification (IPC) or both national classification and IPC G08G5/00		
Applicant MARCONI SELENIA COMMUNICATIONS S.P.A. et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 8 sheets, including this cover sheet.
 

This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 4 sheets.
3. This report contains indications relating to the following items:
  - I  Basis of the opinion
  - II  Priority
  - III  Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
  - IV  Lack of unity of invention
  - V  Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
  - VI  Certain documents cited
  - VII  Certain defects in the international application
  - VIII  Certain observations on the international application

Date of submission of the demand 09.02.2004	Date of completion of this report 28.07.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656;epmu d Fax: +49 89 2399 - 4465	Authorized Officer Heß, D Telephone No. +49 89 2399-2046



INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT

International application No.

PCT/EP 03/07486

**I. Basis of the report**

1. With regard to the elements of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

1-10 as originally filed

**Claims, Numbers**

1-11 received on 15.07.2004 with letter of 12.07.2004

**Drawings, Sheets**

1/3-3/3 as originally filed

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- the language of publication of the international application (under Rule 48.3(b)).
- the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- contained in the international application in written form.
- filed together with the international application in computer readable form.
- furnished subsequently to this Authority in written form.
- furnished subsequently to this Authority in computer readable form.
- The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- the description, pages:
- the claims, Nos.:
- the drawings, sheets:

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5.  This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

**see separate sheet**

6. Additional observations, if necessary:

**III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

the entire international application,  
 claims Nos.

because:

the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (specify):  
 the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 9 are so unclear that no meaningful opinion could be formed (*specify*):

**see separate sheet**

the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.  
 no international search report has been established for the said claims Nos.

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

the written form has not been furnished or does not comply with the Standard.  
 the computer readable form has not been furnished or does not comply with the Standard.

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	1-8, 10, 11
	No: Claims	
Inventive step (IS)	Yes: Claims	1-8, 10, 11
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-8, 10, 11
	No: Claims	

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**2. Citations and explanations**

**see separate sheet**

III.

Independent apparatus claim 9 directed to a ground control station formally also includes those features which distinguish the subject-matter of claim 1 over the cited prior art, cf. the "second means for carrying out an alarm function" as referred to below under item 2.1 of chapter V. While the requirements of Article 33(1) PCT would thus appear to be fulfilled by such a claim, claim 9 as on file does neither meet the requirements of Article 6 PCT nor those of Article 34(2)(b), second sentence, PCT, for the following reasons.

It is directly and unambiguously clear from those passages of the description as originally filed which provide support for the claimed feature of the "second means" or "alarm function", namely page 6, lines 1 to 10, that this functionality is provided only in the avionic system onboard the aircraft. In this instance, it is particularly referred to lines 1 to 3 on description page 6 which explicitly state that the second main function, the so-called alarm function, is carried out by the avionic device.

Similarly, with respect to the "means for carrying out a collision avoidance function" of claim 9, it goes without saying that such means can only be installed in the aircraft itself. Only this subject-matter is supported by the corresponding passage of the originally filed description in lines 8 to 14 and lines 25 to 28 of page 4.

Therefore, the originally filed application documents lack any basis for installing such "means for carrying out a collision avoidance function" and "second means for carrying out an alarm function" in the ground control station, as defined in claim 9 as on file. Thus, amended claim 9 contains subject-matter which goes beyond the disclosure of the international application as originally filed and does not meet the requirements of Article 34(2)(b) PCT.

Independently from the above, but as a result thereof, it is also noted that the subject-matter of claim 9 is not clear and accordingly does not comply with the requirements of Article 6 PCT.

V.

1. Reference is made to the following document:

D1: US 5 714 948

2. The present application is, as far as independent claims 1 and 10 are concerned,

deemed to meet the requirements of Article 33(1) PCT for the following reasons.

**2.1 Claim 1:**

Document D1 (cf. the abstract; col.5, I.36 - col.6, I.3; col.7, I.60 - col.11, I.2; col.20, I.30 - col.22, I.10; Figs.1, 3) is regarded as the closest prior art to the subject-matter of claim 1 and shows (the references in parentheses applying to this document), thereby using the wording of claim 1 as far as possible:

An avionic system (Fig.1) and ground station (Fig.2) for aircraft out of route management and alarm communications comprising at least an avionic device (18), which is fitted on board the aircraft (col.5, I.43-47), with a memory unit (31) for storing predefined information (col.8, I.10-11),

electronic processing means (28) for processing the received information and comparing it in real time with pre-set values (col.7, I.60-col.8, I.9);

interfaces (74) for receiving information from on-board systems (col.20, I.66-col.21, I.10) and sending commands to the aircraft's autopilot (88) to take over the control of the aircraft and return it to pre-set flight levels or spatial positions (cf. col.10, I.2-7 and col.21, I.26-52);

(suitable) sensors (42) for obtaining data on the aircraft onboard situation (col.8, I.47-67);

a communication system (32, 33) for transmitting the onboard situation in real time to ground control stations (48) and receive from the ground (col.21, I.57-59 and I.64-67) or from another aircraft (col.21 I.59-64), appropriate instructions when predetermined events occur (col.9, I.1-17; col.10, I.17-19); and

first means (74) for carrying out a collision avoidance function ("autopilot mode") to avoid collisions when the aircraft is flying, during landing and take-off (col.21, I.38-39), comprising

a first or monitoring state in which the *means* constantly compares the position of the aircraft with (the) pre-set and stored authorized limits (col.21, I.26-27 and I.47-52) and

a second or control state *wherein*, when the aircraft deviates from the authorized limits ("separation standards violation"), the *means* automatically intervenes on the autopilot, through the aforementioned interfaces, to take the aircraft to its spatial limit (col.21, I.47-67).

Thus, the subject-matter of claim 1 differs from this known system in that there is additionally provided:

second means for carrying out an alarm function comprising

a first or monitoring state wherein information on the situation *onboard the aircraft* are stored in the memory unit and are not automatically transmitted to the ground control station, and

a second or alarm state which is activated in cases of alarm, wherein the information generated onboard the aircraft ... are transmitted to the ground control station for appropriate evaluation.

The subject-matter of claim 1 having been slightly linguistically improved is therefore new (Article 33(2) PCT).

The objective technical problem to be solved by the present invention may be regarded as to improve air traffic safety.

More specifically, the alarm function of the second means allows the continuous registering of all events onboard the aircraft during flight in the first or monitoring state without a (normally unnecessary) notification of ground control which is only effected in the case of an alarm in the second or alarm state. Thus, in the non-alarm state which is deemed to prevail most of the time, ground control is not bothered by any onboard aircraft data which are regarded as normal.

The solution to the problem mentioned above proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons:

Document D1 (col.9, l.1-2) likewise discloses to store information on the situation onboard the aircraft in the memory unit (30) in some monitoring state. However, unlike claim 1, in this case the avionic system (18) known from document D1 does transmit this information on the aircraft onboard situation (as detected by sensors 42) to the ground control station (48) at any time, as set out in lines 2 to 9 of column 9.

Thus, document D1 teaches in a direction different from the invention as claimed and hence cannot render obvious the subject-matter of claim 1 to the person skilled in the art. Accordingly, the subject-matter of claim 1 is based on an inventive step and complies with the requirements of Article 33(3) PCT.

## 2.2 Claim 9:

Pursuant to Rule 70.2(c) PCT, this international preliminary examination report shall be established as if the amendment of claim 9 which has been found above under chapter

III. of this report not to comply with the requirements of Article 34(2)(b) PCT had not been made, i.e. the substantive examination will be carried out on claim 9 as originally filed.

In this respect, it is noted that the subject-matter of independent system/apparatus claim 9 is entirely known from document D1 (col.11, l.3-52; Fig.2):

A ground control station (48) suitable for interfacing with the system of claim 1 (cf. e.g. col.9, l.2-11) comprising at least a computer (66) for processing the received data (col.11, l.37-43), a transmission-reception radio system (60, 61), an encrypting and/or encoding system (63, 64), and an audio-visual communications system (70).

Thus, since document D1 reveals all features of claim 9 as originally filed, claim 9 is not novel and hence does not meet the requirements of Article 33(2) PCT.

**2.3 Claim 10:**

Independent claim 10 is directed to a method for aircraft out of route management and comprises features which correspond to those of independent apparatus claim 1 but are drafted in terms of method steps rather than apparatus features.

Therefore, the considerations set out above under item 2.1 with respect to claim 1 apply in an analogous manner to independent claim 11 which hence also meets the requirements of Article 33(2) and (3) PCT for corresponding reasons.

**3. Claims 2 to 8, even though directed to some "management system", are dependent on claim 1, and claim 11 depends on independent method claim 10. Therefore, these claims as such also meet the requirements of the PCT with respect to novelty and inventive step.**